## PART II.

ROYAL COMMISSION ON WATER SUPPLY:

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ALEXANDER, Hugh, Chief Sanitary Inspector of the Parish of St. Leonard's, Shoreditch. (See Questions 8781-8917.)

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BANBURY, Frederick George, M.P., Trustee and Manager of the Stock Exchange. (See Questions 13,698-14,064.)

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BIGWOOD, James, M.P., Chairman of the Parliamentary Committee of the Middlesex County Council. (See Questions, 11,452-11,884.)

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POPE, Samuel, Q.C., Address on behalf of the Metropolitan Water Companies. (See Vol. II., pages 648-654). (The references given are to pages in

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